

CLAIMS

What is claimed is:

1. A cap assembly comprising:
a cap plate having a port aperture;
an electrode port inserted into the port aperture; and
an insulating member formed between the cap plate and the electrode port to insulate the cap plate and the electrode port and to tightly bind the electrode port to the cap plate;
wherein the insulating member, the cap plate, and the electrode port form a single integrated body.
2. The cap assembly of claim 1, wherein the insulating member is formed by insert-injection molding.
3. The cap assembly of claim 1, further comprising an auxiliary binding unit on a surface of the cap plate, wherein the auxiliary binding unit provides tighter binding of the insulating member to the cap plate.
4. The cap assembly of claim 3, wherein the auxiliary binding unit comprises at least one groove formed on the surface of the cap plate, and a portion of the insulating member protrudes into the at least one groove.
5. The cap assembly of claim 1, wherein the electrode port comprises:
a head; and
an insertion extending from the head and inserted into the port aperture;
wherein the diameter of the insertion increases in a direction opposite to the head.
6. The cap assembly of claim 5, wherein the insulating member comprises:
a first insulator interposed between the head of the electrode port and a top surface of the cap plate;
a second insulator interposed between an inner wall of the port aperture and an outer surface of the insertion of the electrode port; and
a third insulator laterally extending from the second insulator to contact a bottom surface

of the cap plate.

7. The cap assembly of claim 1, wherein an end portion of the electrode port protruding out of the port aperture is stretched out by spinning to support a surface of the insulating member upward, providing tighter binding between the electrode port and the insulating member.

8. The cap assembly of claim 1, further comprising a port plate on a surface of the insulating member, the port plate being electrically connected to the electrode port.

9. The cap assembly of claim 8, wherein an end portion of the electrode port protruding out of the port aperture is stretched out by spinning to support a surface of the port plate upward, providing tighter binding between the electrode port and the port plate.

10. A secondary battery comprising:

a battery unit comprising a negative plate, a separator, and a positive plate stacked upon one another and rolled;

a can in which the battery unit is accommodated;

a cap assembly covering a top opening of the can, the cap assembly comprising:

a cap plate having a port aperture,

an electrode port inserted into the port aperture, and

an insulating member formed between the cap plate and the electrode port to insulate the cap plate and the electrode port and to tightly bind the electrode port to the cap plate,

wherein the insulating member, the cap plate, and the electrode port form a single integrated body; and

electrode tabs drawn out from the negative plate and the positive plate of the battery unit and selectively electrically connected to the can.

11. The secondary battery of claim 10, wherein the insulating member is formed by insert-injection molding.

12. The secondary battery of claim 10, further comprising an auxiliary binding unit on

a surface of the cap plate, wherein the auxiliary binding unit provides tighter binding of the insulating member to the cap plate.

13. The secondary battery of claim 10, wherein the electrode port comprises:

a head; and

an insertion extending from the head and inserted into the port aperture;

wherein the diameter of the insertion increases in a direction opposite to the head.

14. The secondary battery of claim 13, wherein the insulating member comprises:

a first insulator interposed between the head of the electrode port and a top surface of the cap plate;

a second insulator interposed between an inner wall of the port aperture and an outer surface of the insertion of the electrode port; and

a third insulator laterally extending from the second insulator to contact a bottom surface of the cap plate.

15. A method of manufacturing a cap assembly, the method comprising:

inserting an electrode port into a port aperture of a cap plate such that there is a predetermined gap between the electrode port and an inner wall of the port aperture; and

injecting a molding resin into the gap between the electrode port and the cap plate to form an insulating member that insulates and tightly binds the electrode port and the cap plate.

16. The method of claim 15, wherein the electrode port comprises:

a head; and

an insertion extending from the head and inserted into the port aperture;

wherein the diameter of the insertion increases in a direction opposite to the head.

17. The method of claim 16, wherein the insulating member comprises:

a first insulator interposed between the head of the electrode port and a top surface of the cap plate;

a second insulator interposed between an inner wall of the port aperture and an outer surface of the insertion of the electrode port; and

a third insulator laterally extending from the second insulator to contact a bottom surface

of the cap plate.

18. The method of claim 15, further comprising a spinning process after the formation of the insulating member, to stretch out an end portion of the electrode port to support a surface of the insulating member upward.

19. The method of claim 15, further comprising forming a port plate separated a predetermined distance from the cap plate before the formation of the insulating member, wherein the insulating member is placed between the cap plate and the port plate.

20. The method of claim 19, further comprising a spinning process after the formation of the insulating member, to stretch out an end portion of the electrode port to support a surface of the port plate upward.